

Abstract Submitted
for the DFD09 Meeting of
The American Physical Society

Experimental study of the hydrodynamic interaction between a pair of bubbles ascending in a non-Newtonian liquid DIEGO SAMANO, RODRIGO VELEZ, ROBERTO ZENIT, Universidad Nacional Autonoma de Mexico — We present some experimental results about the interaction of a pair of bubbles ascending in non-Newtonian fluids. A high speed camera was used to follow in-line and off-line rising motion of two bubbles in a Newtonian fluid (a glycerin-water solution), a Boger fluid (aqueous polyacrylamide solution), and a shear-thinning fluid (aqueous xanthan solution). For the case of shear-thinning fluids, the power index, n , affects the tendency of the bubble pair to aggregate. Therefore, in addition to bubble separation, orientation and Reynolds number, the hydrodynamic force depends strongly on the shear-thinning nature of the fluid. Several examples will be shown. For elastic fluids, the Deborah number affects the hydrodynamic interaction. We found that the appearance of the negative wake changes the nature of the interaction substantially. Some examples and comparisons with numerical results will be presented.

Roberto Zenit
Universidad Nacional Autonoma de Mexico

Date submitted: 06 Aug 2009

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